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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MILLS, DONALD L	

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 02/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/540,779	EBERLE ET AL.	
	Examiner	Art Unit	
	Donald L Mills	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *6-8,10-15,18,22,23,27,28 and 32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6-8,10-15,18,22,23,27,28 and 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/10/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 6-8, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner in view of Gantner et al. (US 5,566,182).

Regarding claim 8, Turner discloses a dual-channel real-time communications system. As shown in Fig. 1, the communication system includes a first communication station 12A and a second communication station 12B (a data network comprising...a sending node...a receiving node). See col. 3, lines 23-43. Each of the host's 14A and 14B are connected to a real-time data port of a real-time channel interface and to best-efforts data ports of a best-efforts channel interface. This is also shown in Fig. 1. As shown by the names of the two transmission channels, data that is delay-sensitive is sent over the real-time connection, and data that doesn't need to be continuous can be sent over the best-efforts channel—these two different transmission channels from two different groups of transmission. See also col. 4, line 29-col. 5, line 7. The "predetermined criteria" can be the delay sensitivity required by the data packets. Also, Turner discloses that the real-time channel can also be a packet-based channel with a certain guaranteed latency, and the best-efforts channel can be a packet-switched channel, such as an Internet connection (node coupled to receive a plurality of information packets from the sending node).

See col. 5, lines 8-27. Turner also discloses that the best-efforts channel interface 22A begins to transmit set-up data during the transmission set-up phase. It is also noted that the setup data can be provided over the real-time channel as well before the transmission of real-time data begins (wherein one of the first and second transmission channels is coupled to transmit control information relating to network protocol). See col. 4, line 64-col. 5, line 8.

Turner does not expressly disclose *wherein the type of operation includes a synchronization operation, including at least one of a lock operation, an atomic read-modify-write operation, and a fetch-and-increment operation.*

Gantner et al. teaches the use of a channel that is used for synchronization information. See at least col. 1, lines 33-35. It is inherent that the system can distinguish among synchronization information and non-synchronization information in order to send the synchronization information over the correct channel. For example, in the ISDN system/method of Gantner each ISDN frame comprises a header comprising F-bits utilized for synchronization. The F-bits are transmitted and received by both the network and terminal for synchronization. The Examiner interprets the reading of the F-bit field for synchronization as a lock operation.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to separate synchronization information from other kinds of information in Turner as taught by Gantner et al.. One would have been motivated to do this because maintaining synchronization is important in order to reduce errors and maintain throughput.

Regarding claims 6 and 7 as explained in the rejection of claim 8, Turner and Gantner teach all of the claim limitations of claim 8 (parent claim). The primary reference further teaches that the channel setup module is responsible for control to the real-time or the best-efforts

channel. Turner also discloses that the various blocks of the system can be implemented using special purpose hardware, software on a general purpose or special purpose processors or a combination of both. Software of a general purpose would qualify as a system program.

Regarding claim 10 as explained in the rejection of claim 8, Turner and Gantner teach all of the claim limitations of claim 8 (parent claim).

Turner does not expressly disclose that the data network is a switched data network having at least one switch for each channel, but it would have been obvious to include at least one switch for each channel, meaning that for two channels, there would be two switches. One would have been motivated to do this because switched networks have certain advantages over non-switched networks when it comes to timing and reliability. Also, Turner discloses that "the real-time channel interface can be a telephone line interface operatively connected to a conventional circuit-switched telephone network and the best efforts channel interface can be a network interface operatively connected to a global packet-based network." See col. 1, lines 43-47.

Regarding claim 12, the primary reference further teaches the two hosts combine to form a cluster network.

3. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turner in view of Gantner et al., further in view of Baumert et al. (US 6,067,300)

Regarding claim 11 as explained in the rejection of claim 8, Turner and Gantner teach all of the claim limitations of claim 8 (parent claim).

Neither Turner nor Gantner. et al. expressly discloses where one of the sending and receiving nodes includes a plurality of buffer descriptors identifying memory segments containing data.

Baumert et al. discloses a shared descriptor memory for storing descriptors point to the data packets stored within the packet memory. See at least col. 1, lines 56-60.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the buffer descriptors taught by Baumert in the combined system of Turner and Jason, Jr. et al.. One would have been motivated to do this because the buffer descriptors would provide quick access to data that is stored in memory.

4. Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turner in view of Gantner, further in view of Hsieh (US 6,212,194).

Regarding claim 13 as explained in the rejection of claim 8, Turner and Gantner teach all of the claim limitations of claim 8 (parent claim).

Turner does not expressly disclose having separate and receive buffers for the first and second transmission channels.

Hsieh discloses having send and receive buffers in each of the nodes. See Fig. 1. It would have been obvious to a person of ordinary skill in the art to have a send and receive buffer for each of the channels.

One would have been motivated to do this because this allows data to be stored and held before it is transferred to another location, which could be full and cannot take data at an immediate moment.

5. Claims 14, 15, 18, 22, 23, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner in view of Whitehill et al. (US 6,404,756) and Turner in view of Fluss (US 6,304,578).

Regarding claims 14 and 15, Turner does not expressly disclose that the scheduling information related to the high bandwidth channel is transmitted over the low latency channel.

Whitehill et al. teaches transmitting requests for data channel access on a separate reservation channel. See col. 3, lines 6-36. Whitehill et al. also teaches the nodes have receive circuits that monitor the reservation channel to see if there are any requests to send over the data channels. When the sending terminal is clear to send, the receiving terminal sends a CTS message over the reservation channel to request to send has been granted. Thus, the receiving circuits act as scheduling circuits. See also Figs. 1 and 3b. Turner further teaches signals from the same source can be broken up by sending some of the signal over the low latency channel and the rest of the signal over the best efforts channel. As an example, Turner states that in telephone conversations, the background noise, which doesn't change much throughout the call, can be sent over the best efforts channel, while the speaker's changing voice can be sent over the real-time, high cost channel. This example from Turner suggests that it would be reasonable to send more critical information (like scheduling information) over the real time channel and still send the actual data over the best efforts channel.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the teachings of Whitehill et al. concerning the transmission of reservation information in Turner by treating the low-latency channel as a type of "reservation channel" for

the best efforts channel. One of ordinary skill in the art would have been motivated to do this because having the reservation or scheduling information sent in a timely manner is critical in real-time traffic that is time sensitive. See col. 3, lines 59-62 of Whitehill et al..

Neither Turner nor Whitehill et al. expressly discloses where the grant indication is sent with greater priority than the rest of the traffic on the low-latency channel and wherein the grant indication includes a unique identifier corresponding to a number of an output port through which the grant indication was sent and wherein during node initialization, a node coupled to the output port listens to grant packets and uses the unique identifier as its node identifier in subsequent transactions over the data network..

Fluss discloses where "small" packets are given higher priority than packets of sustained data flow. See col. 7, lines 22-39. Some of these small packets include control packets and acknowledgment packets—acknowledgement packets act similarly as the CTS message in Whitehill et al.. Fluss also teaches that the router reads the header of incoming downstream IP packets, which comprise a source IP address field that matches a corresponding port (unique identifier) in the router table. See col. 6, lines 61-65.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to give the grant indications from the combination of Turner and Whitehill et al. a higher priority than the rest of the traffic on the line as taught by Fluss. One would have been motivated to do this because the "small" packets are more important than normal data. Setting up connections gives as user feedback that contact has been made with the remote web server, and acknowledgments are needed for the smooth flow of data. See col. 7, lines 34-39 of Fluss.

Further regarding claim 15, Fluss teaches that the router reads the header of incoming downstream IP packets (grant indication at a fixed time in each frame, synchronizes nodes of the network to the frame). See col. 6, lines 61-65.

Regarding claim 18, Whitehill et al. teaches that when network traffic is heavy, the system will send the RTS and other messages at random intervals so as to avoid collisions. See at least col. 8, lines 42-53.

Regarding claim 22, as mentioned previously, Fuss teaches that the small packets given higher priorities can be used in the tearing down of connections—the packets used to do this are included in the category of control packets. And, Fuss teaches sending small packets with higher priority.

Regarding claims 23, as mentioned previously, the two channels of Turner are two different channels, so they are independent. Also, one of the channels handles real-time traffic (low latency channel), and the other channel handles best efforts (high bandwidth).

Regarding claim 27, as mentioned previously, the small packets and control packets of Fuss are given a higher priority.

Regarding claim 28, the combination of Turner, Whitehill et al., and Fuss does not expressly disclose where a higher priority packet prevents the packet from being dropped, but it is well-known in the art that higher priority packets are often not dropped. It would have been obvious not to drop the higher priority packets in the combination of Turner and Whitehill et al.. One would have been motivated to do this because higher priority packets need to get through in order to keep the system going while data packets often can be retransmitted without any detriment to the operations of the system.

6. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turner in view Whitehill et al, further in view of Jason, Jr. et al. of Baumert et al.

Regarding claims 32, Turner, Whitehill et al., and Jason, Jr. et al. do not expressly disclose writing into a buffer.

Baumert et al. discloses a shared descriptor memory for storing descriptors point to the data packets stored within the packet memory. See at least col. 1, lines 56-60.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the buffer descriptors taught by Baumert in the combined system of Turner and Jason, Jr. et al.. One would have been motivated to do this because the buffer descriptors would provide quick access to data that is stored in memory.

Response to Arguments

7. Applicant's arguments filed October 6, 2004 have been fully considered but they are not persuasive.

Rejection Under 35 USC § 103

On page 8 of the remarks, regarding claim 8, Applicant argues Gantner does not teach *a synchronization operation that includes at least one of a lock operation, an atomic read-modify-write operation, and a fetch-and-increment operation.* The Examiner respectfully disagrees. Gantner et al. teaches the use of a channel that is used for synchronization information. See at least col. 1, lines 33-35. It is inherent that the system can distinguish among synchronization information and non-synchronization information in order to send the synchronization

information over the correct channel. For example, in the ISDN system/method of Gantner each ISDN frame comprises a header comprising F-bits utilized for synchronization. The F-bits are transmitted and received by both the network and terminal for synchronization. The Examiner interprets the reading of the F-bit field for synchronization as a lock operation. Therefore, Gantner teaches *a synchronization operation that includes at least one of a lock operation, an atomic read-modify-write operation, and a fetch-and-increment operation.*

On page 9 of the remarks, regarding claim 14, Applicant argues Tuner, Whitehall, and Fluss, alone or in combination fail to teach or suggest *during node initialization, a node coupled to the output port listens to grant packets and uses the unique identifier as its node identifier in subsequent transactions over the data network.* The Examiner respectfully disagrees. Fluss teaches that the router reads the header of incoming downstream IP packets, which comprise a source IP address field that matches a corresponding port (unique identifier) in the router table which corresponds the source node port with the source node IP address. See col. 6, lines 61-65. Therefore, Fluss teaches *during node initialization, a node coupled to the output port listens to grant packets and uses the unique identifier as its node identifier in subsequent transactions over the data network.*

On page 9 of the remarks, regarding claim 15, Applicant argues Turner, Whitehall, and Fluss, alone or in combination fail to teach or suggest *the grant indication is provided at a fixed time in each frame and that the grant indication is used by the nodes of the network to synchronize to the frame.* The Examiner respectfully disagrees. Fluss teaches that the router reads the header of incoming downstream IP packets which the Examiner interprets as a grant indication at a fixed time in each frame, synchronizes nodes of the network to the frame (See col.

6, lines 61-65.) Therefore, Fluss teaches *the grant indication is provided at a fixed time in each frame and that the grant indication is used by the nodes of the network to synchronize to the frame.*

On page 9 of the remarks, regarding claim 18, Applicant argues Turner, Whitehall, and Fluss, alone or in combination fail to teach or suggest *the request indication, the grant indication and an acknowledge indication are always sent at different times over the low latency channel thereby avoiding collisions between the request indication, the grant indication and the acknowledge indication.* The Examiner respectfully disagrees. Whitehill teaches that when network traffic is heavy, the system will send the RTS and other messages at random intervals so as to avoid collisions (See at least col. 8, lines 42-53.) Therefore, the combination of the request, grant and acknowledgement are always sent at different times because the RTS is transmitted at a random interval.

On page 10 of the remarks, regarding claim 22, Applicant argues Turner, Whitehall, and Fluss, alone or in combination fail to teach or suggest *transmitting smaller sized data packets across low latency channel with limited scheduling* (emphasis added). The Examiner respectfully disagrees. Fluss teaches assigning high transmittal priority to data packets addressed to users who have more recently received a previous data packet and low transmittal priority to data packets addressed to users who have relatively less recently received a previous data packet (See abstract). "Small" packets are given higher priority than packets of sustained data flow (See col. 7, lines 22-39.) Some of these small packets include control packets and acknowledgment packets, which are transmitted across low latency channels. Fuss teaches that the small packets given higher priorities can be used in the building or tearing down of connections, which are

transmitted on a limited scheduling because they are only transmitted when a connection is made, destroyed and acknowledged. Which is unlike payload data that is continually transmitted or highly scheduled. Therefore, Turner, Whitehall and Fluss, in combination teach *transmitting smaller sized data packets across low latency channel with limited scheduling.*

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald L Mills whose telephone number is 571-272-3094. The examiner can normally be reached on 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donald L Mills
DLM
February 9, 2005

JOHN PEZZLO
PRIMARY EXAMINER